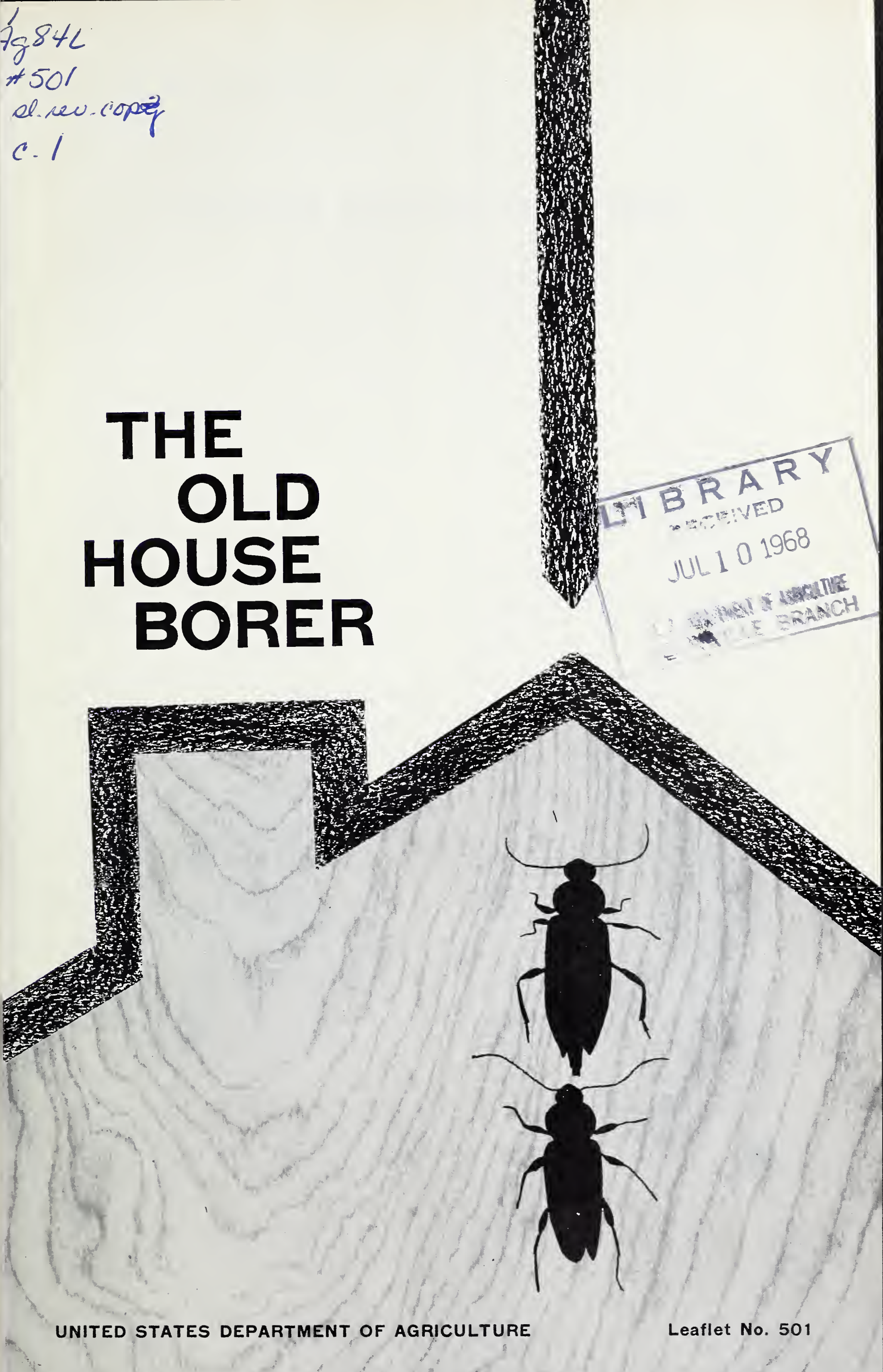
Historic, archived document

Do not assume content reflects current scientific knowledge, policies, or practices.

1
Ag84L
#501
al. rev. copy
c. 1

THE OLD HOUSE BORER

LIBRARY
RECEIVED
JUL 10 1968
U.S. DEPARTMENT OF AGRICULTURE
BELTSVILLE BRANCH



UNITED STATES DEPARTMENT OF AGRICULTURE

Leaflet No. 501

THE OLD HOUSE BORER

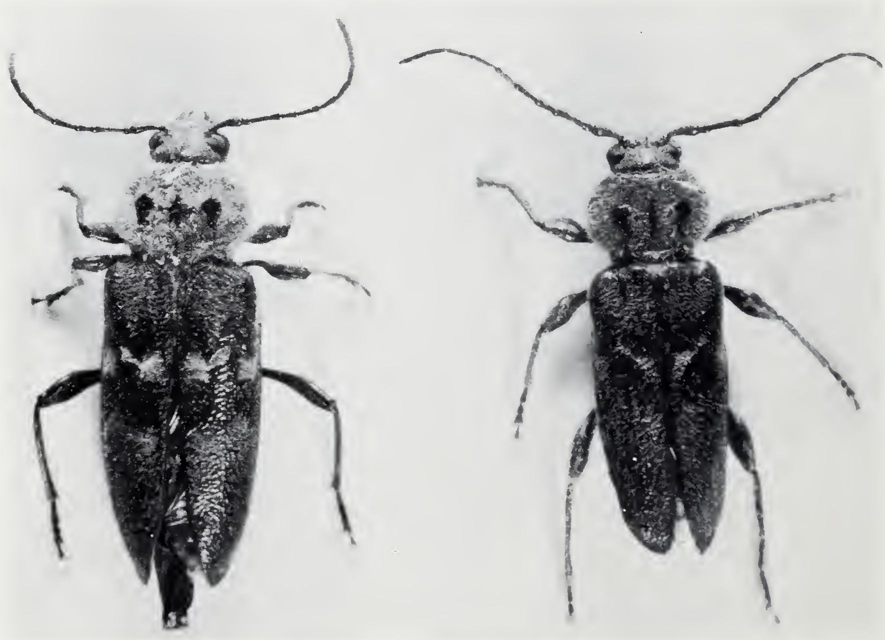
The old house borer is an insect that can cause severe damage in buildings in Eastern United States.

The larva bores through and also feeds on wood. Its tunneling or mining weakens structural timbers, framing members, and other wood parts of a house or other building. Serious infestations of this insect have occurred in the Atlantic coastal States from Florida northward through Massachusetts.

The adult beetles (fig. 1) have also been found in Mississippi, Louisiana, and Texas. This borer has not been found west of the Mississippi River except in Texas.

Contrary to its name, the old house borer most often damages new buildings in this country. The common name comes from the fact that it is primarily a pest in old buildings in Europe. The old house borer, *Hylotrupes bajulus* (L.), has been present in the United States more than 100 years. It is also a pest in Africa, Australia, and southern South America. In South Africa it is called the "Italian beetle."

The insect apparently prefers pine and spruce wood. Sometimes it attacks hemlock, true fir, or Douglas-fir. It infests the sapwood in pieces of lumber, rather than the heartwood. The borer does not work in decayed wood.



F—494430

Figure 1.—Old house borer adults, enlarged about 3X. Female left; male right.

Signs of Infestation

Ordinarily you will not discover the old house borer until it has begun to cause damage. The insect is rarely seen in either the adult or the larval (borer) stage. Following are some possible indications that old house borers are active in a building.

- A rasping or ticking sound made by larvae while boring or feeding.
- Blistering of the wood when the larva works close to the surface.
- Powdery borings in sapwood or the larva in its tunnel, made visible by breaking the surface with a sharp instrument where tunneling is suspected.
- Boring dust on surfaces below infested timbers.
- Surface holes made by adult beetles emerging. Broadly oval shape; size ¼ inch.
- Beetles in the building.

Life Cycle

The old house borer passes through four distinct stages: adult, egg, larva, and pupa. Nearly all of its lifetime is spent as a larva (borer). The adult stage lasts from 8 to 16 days; the egg stage, about 2 weeks; the larval stage, several years; and the pupal stage, about 2 weeks.

The total time required for the old house borer to develop from egg to adult in this country is not known exactly. From 3 to 5 years may be required in the Southern States. Northward from the latitude of Washington, D.C., an additional period of 2 to 3 years may be necessary.

In many areas the majority of the adults fly in June and July. In Texas the adults have been found in early May. They are active as late as September in the Northeast.

Description

The adult beetle is one-half to three-fourths of an inch long and slightly flattened in shape. It is brownish black. Many gray hairs appear on the head and the forward part of the body. Each hard-shelled wing cover has two patches of gray; when fused they form either two transverse bands or two downy-white spots.

The egg is white to grayish white, spindle shaped, and about one-twelfth of an inch long. The larva is flesh colored, straight bodied, wedge shaped, and segmented. Its length varies from that of the tiny young, about the same length as the egg, to about 1¼ inches when full grown (fig. 2). The larva has small legs. Three tiny ocelli (black eye spots) can usually be seen on each side of the head at the base of the antennae (feelers).

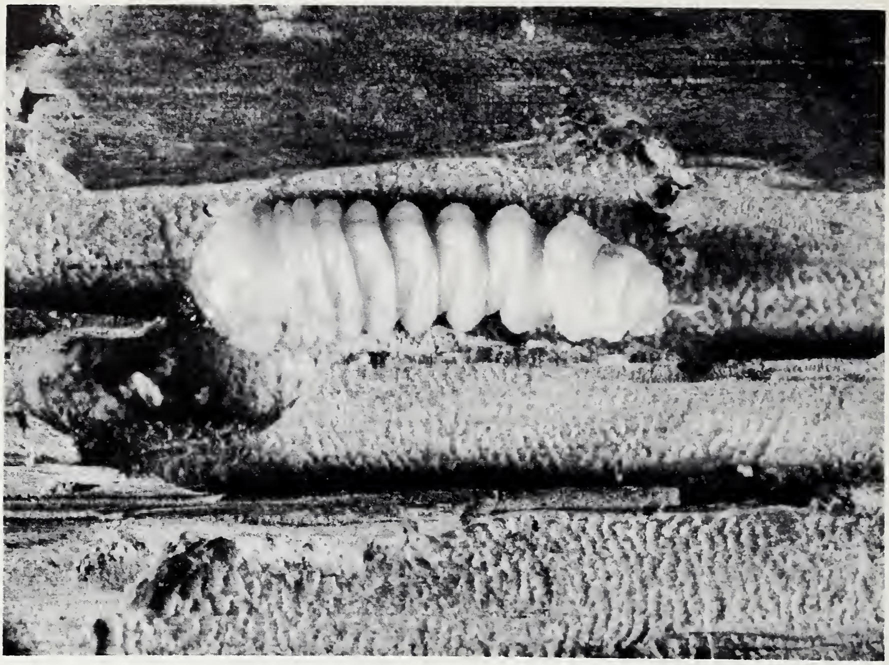
The pupa is about the size of the beetle and is flesh colored when first formed. Later, as the pupa matures, it darkens and develops antennae, eyes, wings, and legs.

Habits

The female beetle often deposits her eggs in clusters in a fan-shaped pattern, or in rows and layers in tight crevices. Ideal sites for egg-laying are in stacked lumber and the cracks and natural checks in boards.

Old house borer larvae develop slowly during the first year or two, and give no signs of their presence during this period. Detection of an attack in the early stages is difficult. Consequently, lumber that is already infested is often used in construction.

Most buildings and houses recently found to be infested were less than 10 years old. In older buildings, adult beetle emergence holes usually can be found at the surface



F—494431

Figure 2.—Nearly mature larva of the old house borer, enlarged about 2X. Powdery borings have been removed from the tunnels.

of the infested wood. Under such conditions, it is likely that the mature larvae present in the wood are a second generation. So apparently the insect is reproducing successfully in buildings of modern construction.

Because generally warmer temperatures prevail in upper floors, adult beetles in attic timbers often emerge a year or two earlier than those in wood in the basement of the same building. The higher temperatures cause the insects to be active continuously and thus to speed up their development.

Newly hatched larvae feed near the surface of the wood. Later they penetrate deeper, and may continue their tunneling until they have completely mined the sapwood (fig. 3). Ordinarily the heartwood is not attacked.

During their feeding, larvae seldom break through the wood surface. Borer activity may not produce any visible surface changes. Thus a timber so heavily mined that it is near collapse may appear from the outside to be perfectly sound.

Damage Caused

In Europe half of the old buildings in some countries are infested, according to the reports of European investigators. In timbers composed largely of sapwood, borer damage frequently causes roofs to collapse or other parts of a building to settle.

In this country several buildings have had extensive borer damage. Some had to be torn down; others were closed until weaknesses in the structure could be corrected.

Individual timbers in buildings may be severely damaged in 4 to 7 years. Other timbers may be only lightly infested. Air-dried pine floor joists, plates or sills, and subflooring are apt to be damaged most severely. Other framing such as studs, stair carriages, furring strips, and roof rafters are sometimes attacked. Occasionally, new buildings of brick or stone construction have the borer in furring strips and wooden members of wall construction.

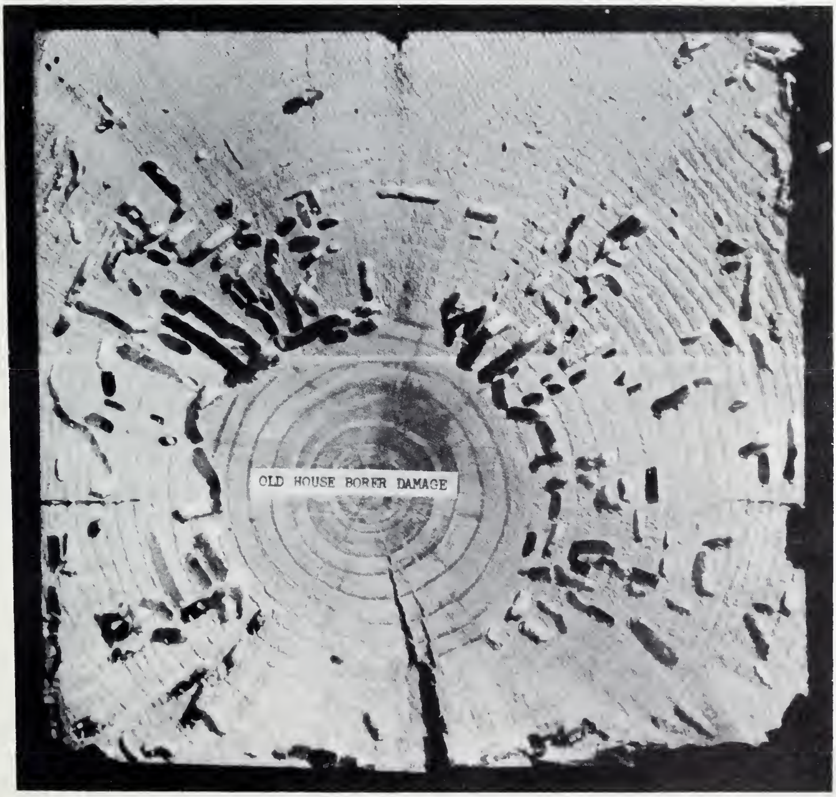
Lumber that has been kiln-dried is also subject to attack.

When infestation by the old house borer is discovered, two types of remedial action are necessary. These are (1) correcting or repairing any serious structural defects caused by extensive borer feeding, and (2) controlling the remaining insects present in the wood left in place. Either or both remedies may be expensive.

Natural Controls

Known insect enemies of the old house borer include two parasitic braconid wasps and one predaceous clerid (beetle). In buildings, small numbers of old house borer adults are captured by spiders. How much influence these natural enemies have on borer populations has never been determined.

High temperatures that sometimes develop in attics and other nonventilated spaces during the summer months are probably un-



F—494432

Figure 3.—Moderate borer damage in an 8- by 8-inch beam, part of a warehouse. The beam was cut to expose the borer tunnels.

favorable to the borer. They are believed to restrict egglaying by the female, the hatching of eggs, and development of larvae. In Europe, heat treatment of buildings with specially built machines is used to control the borer.

Applied Control

Fumigation

Borer infestation in buildings can be controlled most speedily by fumigation. This is most effective when done during warm weather. Where the insect is working in walls, and other hard-to-reach places, fumigation may be the only practical control method. However, it is safe only in detached buildings. In an apartment, part of a duplex, or row house, the gas might penetrate walls and kill persons in an adjoining unit.

Fumigation must be done only by qualified pest control operators. Either methyl bromide or hydrocyanic gas should be used. Do not permit anyone to enter a fumigated building until it has been thoroughly aired. Otherwise, entering a fumigated building might be fatal. Fumigation does not leave a toxic residue on wood surfaces; therefore, it does not prevent reinfestation at a later time.

Surface Treatments

You may find wood in a building that is infested by borers, but not damaged or weakened enough to require its replacement. Where such wood is accessible, you can kill the borer larvae by applying toxic penetrating oil solutions to the surface. To be effective, the chemical must be applied in the correct amount and must be absorbed by the wood.

The chemicals also have preventive qualities that help to safeguard the treated material against future infestations. Preliminary tests show that both recently hatched and full-grown larvae have failed to establish themselves in the treated wood.

Before applying the chemicals, mark out the areas needing treatment by using the means of detection described under Signs of Infestation.

For surface applications use deodorized kerosene, such as deobase or ultrasene, containing one of the following insecticides:

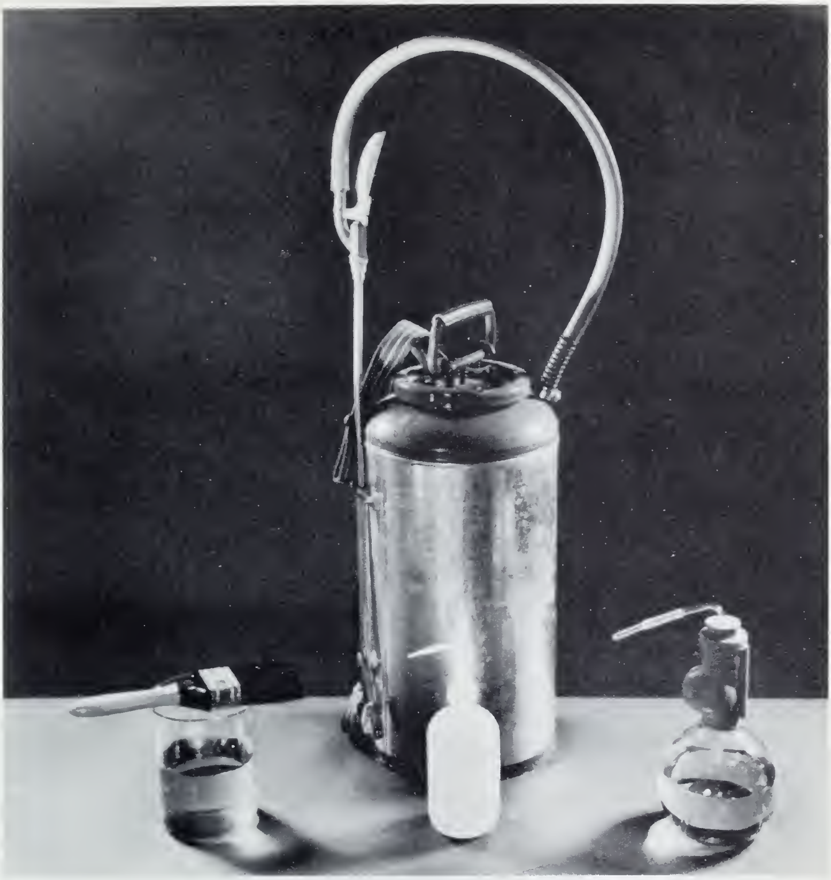
0.5 percent dieldrin
0.5 percent lindane
5 percent DDT
2 percent chlordane.

Other oil carriers, such as plain kerosene or fuel oil, can be used, but they may cause some staining and may leave a residual oily odor. Also, their use increases the fire hazard.

Apply the insecticide at the rate of *1½ pints per cubic foot of wood treated.* At this rate, for example, 1½ pints would be used in treating all the exposed surfaces of 7 linear feet of a 2- by 10-inch floor joist. Other equivalents of a cubic foot are 12 linear feet of a 2- by 6-inch roof rafter, 18 linear feet of a 2- by 4-inch stud, or 12 square feet of subflooring. Best absorption is obtained when the wood is dry and the temperature at least 80° F.

You can brush the chemical on small areas. To treat extensive areas or to treat wood overhead, you will need a spray-type or similar applicator. Use either a small pressure wash bottle, a plastic polyethylene bottle of the squeeze type, or a garden sprayer with the atomizing disk removed (fig. 4). Each produces *a small solid stream of liquid at low pressure.*

With a solid stream applicator you can direct the insecticide into small crevices, which a fine spray would not reach. On overhead surfaces it is necessary to move the



F–494433

Figure 4.—Four types of applicators for treating wood surfaces with toxic oil solutions.

nozzle rapidly to prevent runoff of the insecticide.

Infested wood may not readily absorb the required quantity of insecticide. If not, repeat the treatment later until the required amount of chemical has been deposited.

Never apply the toxic oil solution as a mist. The mist is dangerous to persons, and it sets up a fire hazard. Furthermore, chemicals applied as a mist are not absorbed by wood to an effective degree.

To control infestations in structural timbers of large diameter, it may be necessary to apply the chemicals through bore holes, in addition to treating exterior surfaces. The purpose is to saturate the interior of the wood. Some pest control operators inject the toxic oil solution through the holes under pressure, to hasten penetration of the wood and death of the borers.

Following surface treatment, from 1 to 4 months may elapse before the borers are destroyed. Variations in the time required for control depend somewhat on the size of infested units, their moisture content, the degree of infestation, species of wood infested, and type of surface finish. Treatment of wood that has been painted, varnished, or waxed has had little success.

Precautions

Only qualified pest control operators are permitted to do fumigation work.

The four insecticides—dieldrin, lindane, DDT, and chlordane—are poisonous to people and animals. When applied by the methods prescribed in this leaflet, the insecticides are particularly dangerous because they are in oil formulations that are readily absorbed through the skin. Avoid skin contact by wearing oil-resistant rubber gloves, and face shields or goggles. Avoid spilling on the body. If insecticide gets on the body, wash it off with warm soapy water and, if necessary, call a physician.

Follow all cautions on the container label. Do not inhale excessive quantities of fumes. Provide ventilation in work areas. Eliminate open flames.

Use drop cloths or papers in work areas to prevent damage to wooden or tiled floors. Do not apply too much chemical at one time to a second or third story wood floor because, if seepage occurs, the ceilings below may be stained. Where extensive treating has to be done in a basement, complete the work during warm weather when good ventilation is possible. This will eliminate some odors that may penetrate the rooms above.

Other Pests in Buildings

Information on control of other wood-destroying insects is given in the publications listed below. One copy of each publication can be obtained from the Office of Information, Department of Agriculture, Washington, D.C. 20250.

Subterranean Termites: Their Prevention and Control in Buildings. U.S. Dept. Agr. Home and Garden Bul. 64, 30 pp.

Control of Nonsubterranean Termites. U.S. Dept. Agr. Farmers' Bul. 2018, 16 pp.

PROTECT

Use Pesticides Safely

FOLLOW THE LABEL

U.S. DEPARTMENT OF AGRICULTURE

Prepared by T. McIntyre, Northeastern Forest Experiment Station, Forest Service, U.S. Department of Agriculture, Upper Darby, Pa.; and R. A. St. George, retired, Beltsville Forest Insect Laboratory, Forest Service, U.S. Department of Agriculture, Beltsville, Md. • Issued December 1961; slightly revised May 1968.

For sale by the Superintendent of Documents, U.S. Government Printing Office
Washington, D.C. 20402 - Price 5 cents

☆U.S. GOVERNMENT PRINTING OFFICE: 1968 O—295-071